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GRAPHICS TABLET TECHNICAL PROCEDURES

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Graphics Tablet Technical Procedures

Section 1

Apple //e Installation

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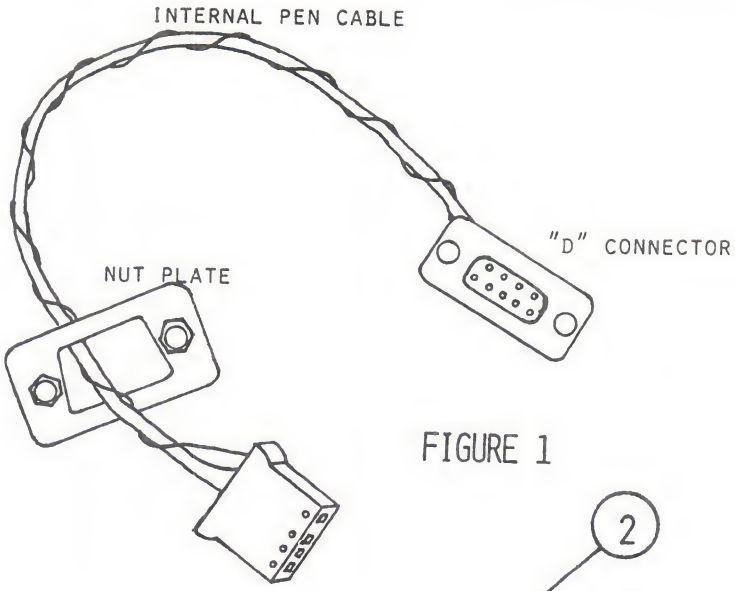

FIGURE 1

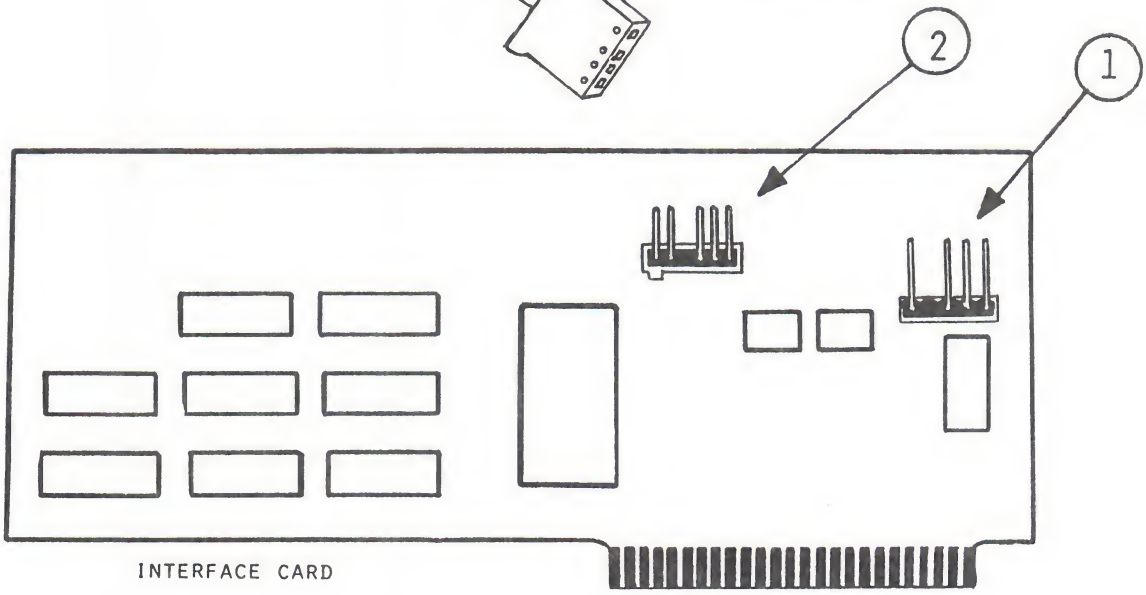

FIGURE 2

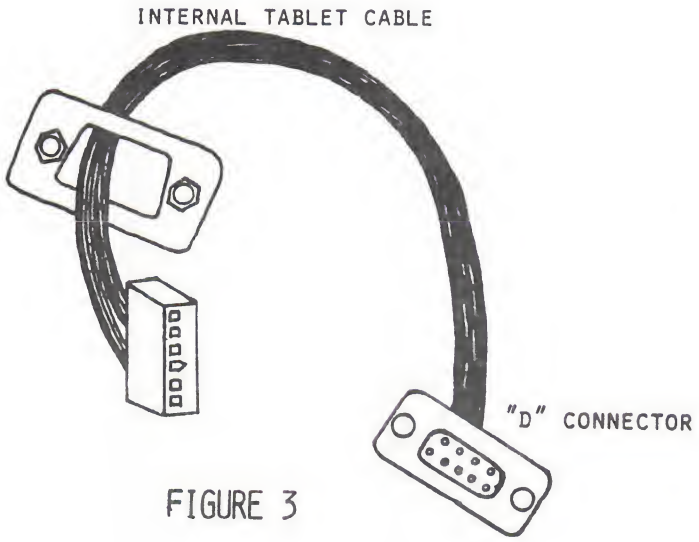

FIGURE 3

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INTRODUCTION

The new Graphics Tablet RFI is functionally identical to that of the NON-RFI Graphics Tablet, A2M0029. Minor changes have been made to meet EMI specifications required by the FCC.

EQUIPMENT REQUIRED

To install the Graphics Tablet on an Apple //e you will need:

- o Small flatblade screwdriver
- o Two nut plates
- o Four hexagonal-head screws
- o The small wrench that comes with the Graphics Tablet

NOTE: The large, gray-metal, two-piece connector clamp that comes with the interface card is not needed for Apple //e installation. It is only used with earlier models of the Apple][.

A. CONNECTING THE INTERNAL CABLES TO THE INTERFACE CARD

1. Find the internal pen cable and one of the nut plates (see Figure 1). This cable has a "D"-shaped connector at one end and a small slip-on connector at the other end with four holes in it. Put the slip-on connector through the nut plate, with the nuts facing away from the "D"-shaped connector.

2. Locate a set of four pins near the top right edge of the interface card (see Figure 2, #1) and slide the slip-on connector onto the pins.

3. Now find the internal tablet cable and put its slip-on connector through the nut plate, with the nuts facing away from the "D"-shaped connector (See Figure 3).

4. Slide this connector onto the second set of pins (see Figure 2,#2) on the interface card to the left of the first cable you connected.

B. INSERTING THE INTERFACE CARD

1. Unplug the power cord from the back of the computer.

2. Remove the cover of the Apple computer. You will install the interface board into one of the expansion slots at the back of the main board. The slots are numbered from 1 to 7 with slot 1 nearest to the power supply case. The interface card will work properly in any slot except slot 3. Slot 5 is a good choice because it's near the location where the "D" connectors will be installed on the back of the computer.

3. Insert the interface card into slot 5.

C. ATTACHING THE CABLES TO THE BACK PANEL

1. Now turn the computer around and look at the back panel. You'll see several numbered openings with rectangular plugs in them. Openings 5 and 6 will be used for the Graphics Tablet connectors (actually, any of the openings may be used as long as they are the same size). Remove the hole plugs in openings 5 and 6 by presssing down and out on the plastic tab on the back of each plug.

2. Slide the nut plate up the tablet internal cable until it's right up against the "D"-shaped connector. The tablet internal cable is the one connected closest to the middle of the interface card.

3. Next put the connector and nut plate up against the bottom opening in the back panel (opening 6). The connector should be in direct contact with the back panel, the nut plate should be directly behind the connector, and the part of the connector with the nine holes in it should be protruding through the opening.

4. Now insert the hexagonal-head screws from outside the computer through the notches above and below the opening in the back panel, then through the holes in the connector, and finally through the holes in the nut plate. Tighten the screws with the wrench that came in the Graphics Tablet package.

5. Plug the cable from the Graphics Tablet into the internal cable connector. Finish the connection by tightening the two screws.

6. Now attach the internal pen cable to opening 5 on the back panel.

7. Next plug the external pen cable into the internal pen connector. Tighten the two screws.

8. Double-check all of the connections you've made, using this list:

   - the internal tablet cable is attached to the external tablet cable
   - the internal pen cable is attached to the external pen cable
   - the interface card is firmly seated
   - the "D"-shaped connectors are firmly plugged in and the screws are tightened down

9. Put the cover back on the computer.

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Graphics Tablet Technical Procedures

Section 2

Apple][or Apple //-Plus Installation

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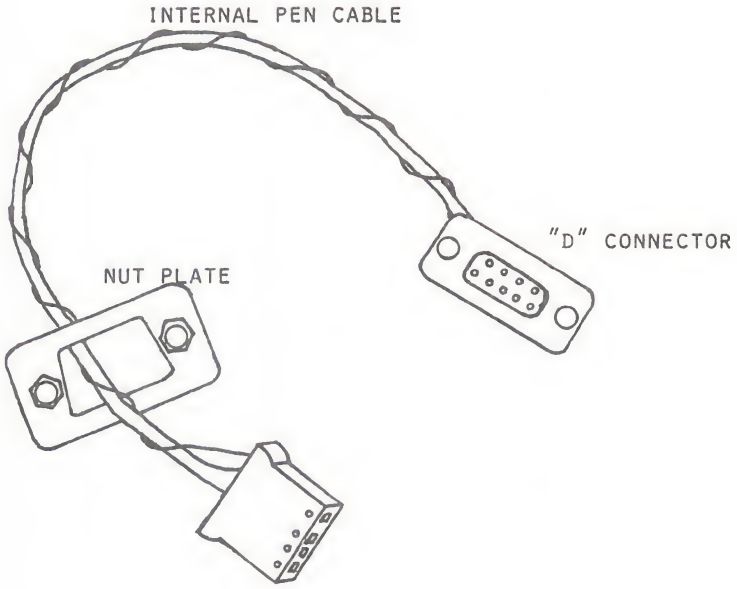

FIGURE 1

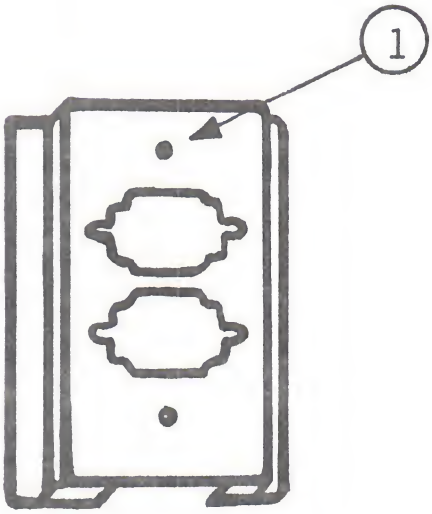

FIGURE 2

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INTRODUCTION

The new Graphics Tablet is functionally identical to the non-RFI Graphics Tablet, A2M0029. Minor changes have been made to meet the EMI specifications required by the FCC.

EQUIPMENT REQUIRED

To install the Graphics Tablet on an Apple][or // Plus you'll need these items:

- The large, gray-metal, two-piece clamp that comes with the Graphics Tablet
- Two nut plates
- Two Phillips-head screws
- Four hexagonal-head screws
- The small wrench that comes with the Graphics Tablet
- Small Phillips screwdriver
- Small flat blade screwdriver

A. ATTACHING THE INTERNAL CABLES TO THE CONNECTOR CLAMP

1. Find the internal pen cable and one of the nut plates (See Figure 1). This cable has a "D"-shaped connector at one end and a small slip-on connector at the other end with four holes in it. Put the slip-on connector through the nut plate, with the nuts facing away from the "D"-shaped connector.

2. Find the front piece of the two-piece connector clamp (See Figure 2). The top is the end where the screw hole is nearer the edge (see Figure 2,#1). Put the "D"-shaped connector and nut plate right up against the top opening. The connector should be in direct contact with the clamp, the nut plate should be directly behind the connector, and the part of the connector with the nine small holes in it should be protruding through the opening in the clamp.

3. Attach the connector and the nut plate to the clamp by putting the hexagonal-head screws through the front of the clamp, then through the holes in the "D"-shaped connector, and finally through the nut plate. Tighten down the screws with the small wrench that came with the Graphics Tablet.

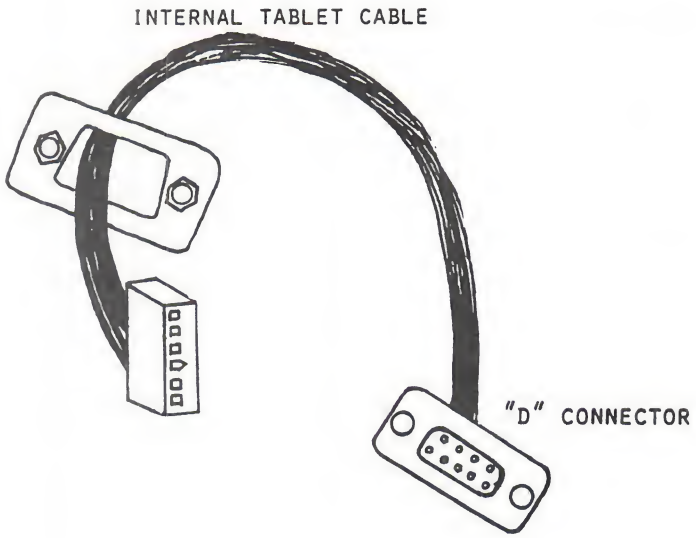

FIGURE 3

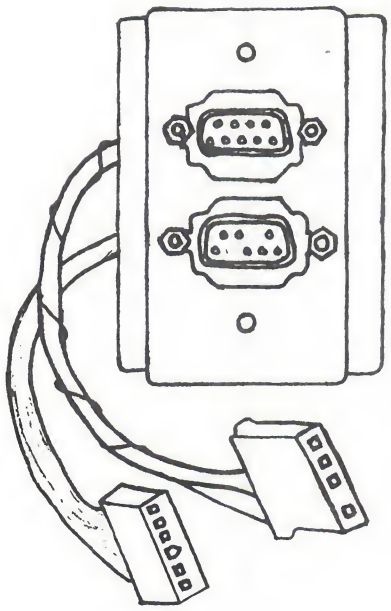

FIGURE 4

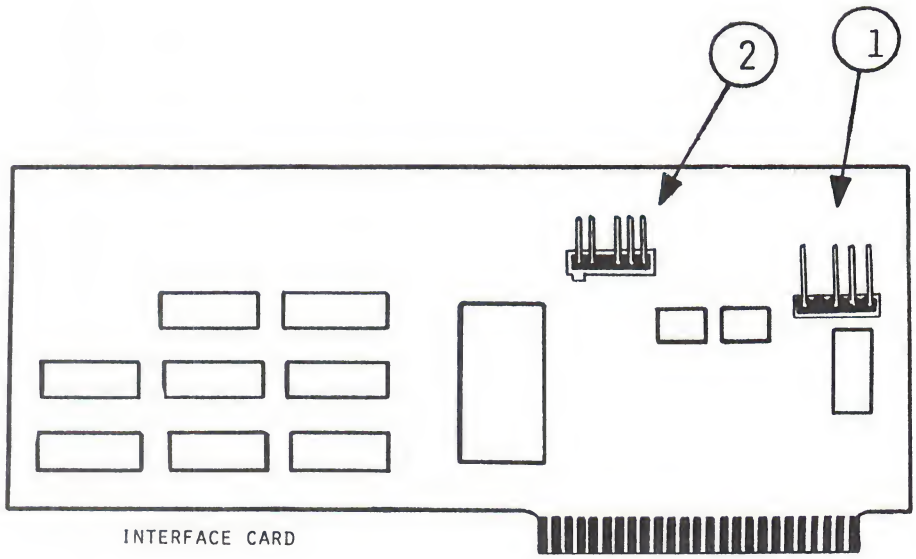

FIGURE 5

4. Now find the internal tablet cable (see Figure 3). It has a slip-on connector with six small holes on one end. Slide the slip-on connector through the other nut plate, making sure that that the nuts are facing away from the "D"-shaped connector.

5. Attach the connector and nut plate, as you did in steps 2 and 3, to the bottom opening of the connector clamp. The assembled connectors are shown in Figure 4.

6. Now that the connectors are attached to the front of the clamp, fit the two clamp pieces together to form a "box" and put the two internal cables through the side opening on the back of the clamp. Make sure the screw holes line up. Attach the two clamp pieces with two Phillips head screws. Don't tighten the screws completely yet.

B. CONNECTING THE INTERNAL CABLES TO THE INTERFACE CARD

1. The internal pen cable should now be attached to the top cutout in the connector clamp. Check to see that the small slip-on connector at the end has four holes.

2. Locate a set of four pins near the top right edge of the interface card (see Figure 5, #1) and gently slide the slip-on connector onto the pins.

3. Now find the Graphics Tablet internal cable. It should be attached to the bottom cutout on the front of the connector clamp.

4. Slide the end with the slip-on connector onto the second set of pins (see Figure 5,#2) on the interface card to the left of the first cable you connected.

C. INSTALLING THE CONNECTOR CLAMP

1. Unplug the power cord from the back of the computer and remove the cover.

2. Look at the back panel of the computer. The connector clamp will be installed into one of the three deep vertical notches. Take the connector clamp and slide it down as far as it will go into one of the notches. If you have trouble sliding the connector down into the notch, loosen the two Phillips head screws and then push it down into the slot. Now tighten the screws that hold the clamp assembly together until the clamp can no longer be moved in the opening.

D. INSERTING THE INTERFACE CARD

1. You will install the interface card in one of the expansion slots. The slots are numbered from 0 to 7 with slot 0 nearest to the power supply. The interface card will work properly in any slot except slot 0. Insert the interface card into a slot near the connector clamp.

E. CONNECTING THE INTERNAL AND EXTERNAL CABLES

1. Now find the cable attached to the Graphics Tablet pen and plug it into the top connector. Complete the connection by tightening the screws on the external pen connector.

2. Plug the connector on the cable attached to the Graphics Tablet into the bottom connector. Complete the connection by tightening the screws on the external tablet connector.

3. Double-check all of the connections you've made, using this list:

   - the internal tablet cable is attached to the external tablet cable
   - the internal pen cable is attached to the external pen cable
   - the interface card is firmly seated
   - the "D"-shaped connectors are firmly plugged in and the screws are tightened down

4. Put the cover back on the computer.

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Graphics Tablet Technical Procedures

Section 3

Troubleshooting

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SYMPTOM TABLE

CAUTION: Diskettes and video tapes can be erased by the magnetism of the Graphics Tablet or biasing magnet. Do not store diskettes or video cassettes on or near the Graphics Tablet or biasing magnet.

SYMPTOM	CORRECTIVE ACTION
MONITOR DISPLAYS: "NOT DETECTING INTERFACE CARD"	1. Check interface card firmly seated 2. Clean card contacts ("fingers"). 3. Replace interface card.
UNABLE TO DRAW OR SELECT MENU COMMANDS WITH THE PEN	1. Swap the following components in this order: o Interface card o Pen o Internal pen cable o Internal tablet cable o Graphics tablet
APPLE //e "BEEPS" WHEN TYPING GRAPHICS TABLET COMMANDS	1. Press the "CAPS LOCK" key and retype the command. Apple //e will not accept lower case commands with the graphics tablet software.
ERRATIC DRAWING: EXTRA OR MISSING DOTS	1. Wipe the tablet surface and the menu with the anti-static cloth

CAUTION: When using the biasing magnet, keep the magnet away from diskettes and video tapes. A magnetic field can erase information.

2. With power off, draw the biasing magnet across the surface using a slow continuous motion in a single direction. Do this for each direction; left to right, top to bottom, and diagonally.

3. Boot the Graphics Tablet Software diskette.

4. Select MENU ALIGNMENT and follow the instructions on the monitor.

NOTE: If the tablet does not pass the MENU ALIGNMENT procedure, perform the following procedure, PEN ALIGNMENT.

PEN ALIGNMENT

To perform this procedure, you will need the following:

- o Apple II Product Diagnostic Diskette (P/N 077-0100)
- o Pen alignment block
- o Nylon coil adjustment tool
- o Sheet of 1/8" plexiglass
- o Anti-static cloth

1. Boot the Apple II Product Diagnostic diskette.

2. Select CARD TESTS and after that GRAPHICS TABLET TEST.

   NOTE: To avoid confusion follow the instructions given here rather than the instructions displayed on the screen, as they sometimes refer to things you should do after you have pressed ESC to proceed to the next screen.

3. Press ESC and wait for the ROM test. If the ROM test fails, replace the interface card.

4. Press ESC.

5. Place the pen in the wooden alignment block.

6. Place the alignment block so that the pen is between the eighth and ninth lines (counting the top border of the graph as line 1) in the column called "dots".

7. Press ESC twice.

8. Insert the nylon coil adjustment tool into the top of L2 (upper left corner of the interface card), and turn the slug counterclockwise until it is even with the top of the sleeve; then turn it clockwise until the crosshairs stabilize in the middle box. Continue to turn until they disappear again.

9. Now turn it counterclockwise again until the crosshairs first stabilize within the middle box.

10. Look straight down on the top of the tool and notice what direction the blade is pointing in.

11. Now continue to turn the tool counterclockwise.

12. When the crosshairs lose stability and jump out of the box, restabilize them; then look at the top of the tool and note which direction the blade points.

13. The correct setting is halfway between the two points at which the crosshairs stabilize.

CHECKING THE TABLET

With the surface biased, the menu aligned, and the pen aligned, you must check the tablet to see if there are any troubles that have not been corrected.

1. Press ESC three times.

2. Wipe both sides of the sheet of 1/8" plexiglass with the anti-static cloth.

3. Place the plexiglass over the menu and with a straight edge (don't use metal), draw lines around the edges, through the middle, and diagonally. There should be no gaps, double lines, "glitches", or extraneous dots. If there are, repeat the biasing procedures, and wipe the surfaces with the anti-static cloth.

4. If there are still missing or extra dots,the unit should be sent to Level II Service Center.

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Graphics Tablet Technical Procedures

Section 4

RFI Upgrade Procedures

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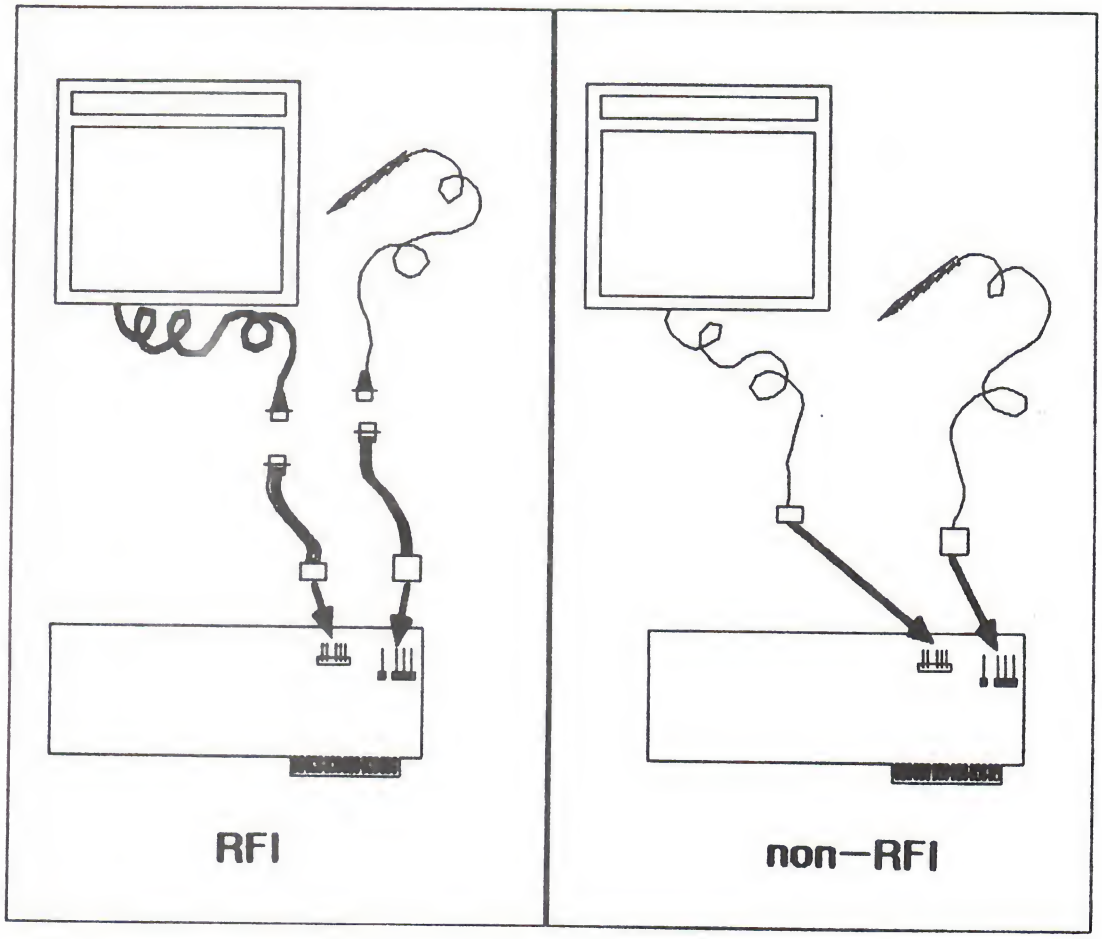

Figure 1

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INTRODUCTION

When a non-RFI Graphics Tablet is brought in for repair, you can either service it using the non-RFI parts that you have in stock or replace non-RFI modules/parts with their RFI counterparts. This section tells you what parts you will need and what to do to upgrade from a non-RFI Graphics Tablet to an RFI version.

RFI PARTS AND PART NUMBERS NEEDED FOR THE UPGRADE

You will need the following RFI parts to do the upgrade:

661-91140	Graphics Tablet Assy-RFI
661-91141	Graphics Tablet Interface Card-RFI
661-91142	Graphics Tablet Stylus RFI
590-0085	Cable Assy Tablet, Internal
590-0102	Cable Assy Stylus, Internal
600-8010	Assy, Installation Hardware (A //e)
805-0085	Clamp, Rear Peripheral Int. Conn. (A II/II+)
805-0105	Clamp, Front (A II/II+)

UPGRADING TO RFI

Refer to Figure 1, which shows the configuration for the RFI and non-RFI versions of the Graphics Tablet. Notice that the only difference for the RFI configuration is that the tablet and the pen do not connect directly to the Interface Card. Instead, they connect to a short cable, and the cable connects to the Interface Card.

NOTE: Graphics Tablet installation procedures for the Apple //e are given in Section 1 of the Graphics Tablet Technical Procedures. Section 2 gives the installation procedures for the Apple II and II Plus.

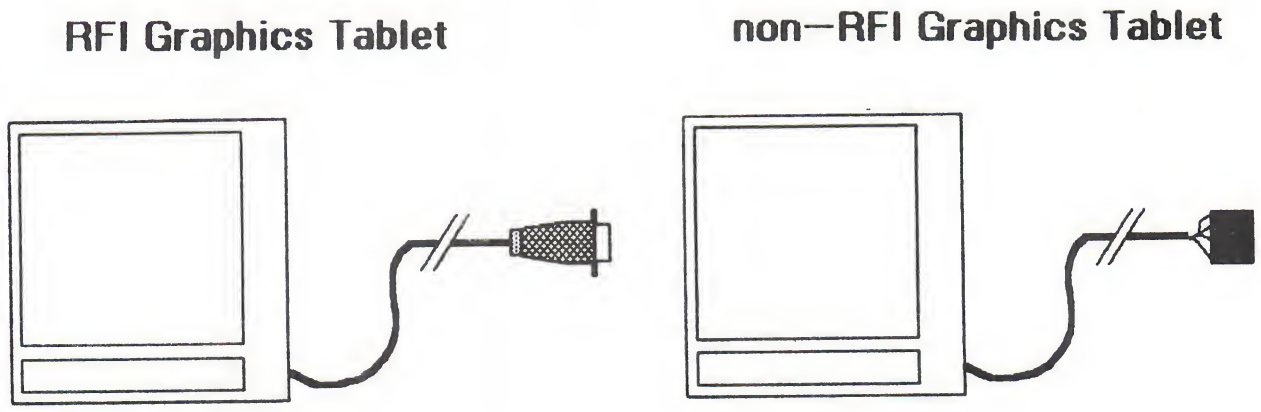

Figure 2

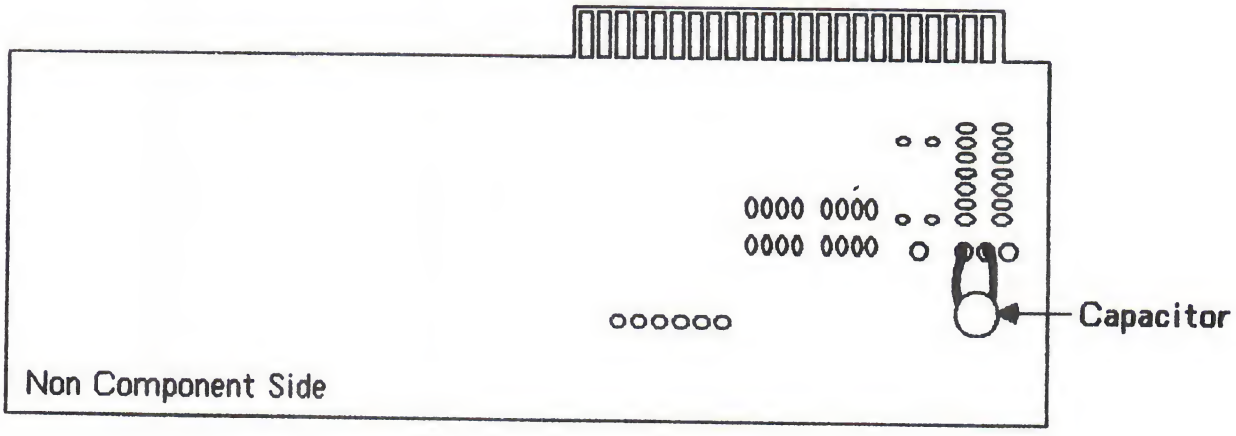

Figure 3

To upgrade to RFI, follow these steps:

1. Connect the RFI Graphics Tablet (see Figure 2) to the short cable with the colored plastic connector. Connect the other end of the short cable to the five-pronged connector on the RFI Interface Card. (See Figure 1.)

   NOTE: The RFI Interface Card has a different R1 resistor value than the non-RFI version.

   RFI R1 = 75 Ohm-5% (purple-green-black-gold)

   Non-RFI R1 = 470 Ohm-5% (Yellow-purple-brown-gold)

   The RFI version also has a capacitor on the noncomponent side of the card. (See Figure 3.)

2. Connect the RFI Pen (see Figure 4) to the short cable with the white plastic connector. Connect the other end of the short cable to the four-pronged connector on the RFI Interface Card. (See Figure 1.)

3. If there is a non-RFI Interface Card in the computer, remove it and then insert the RFI Interface Card into slot 4 of the computer.

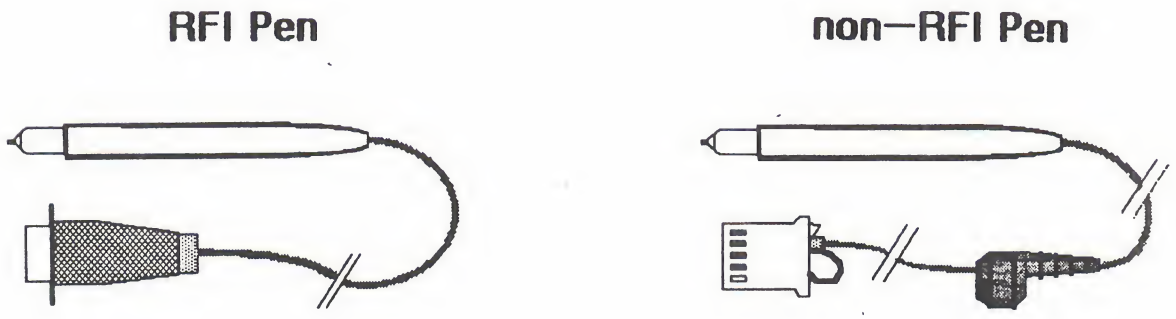

Figure 4

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Graphics Tablet Non RFI-RFI Technical Procedures

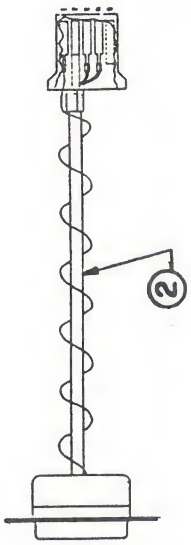
Section 5

Illustrated Parts List

The figures and lists below include all piece parts that can be purchased separately from Apple for the Graphics Tablet Non RFI-RFI, along with their part numbers. These are the only parts available from Apple. Refer to your Apple Service Programs manual for prices.

Contents:

Illustrated Parts List..... 5.1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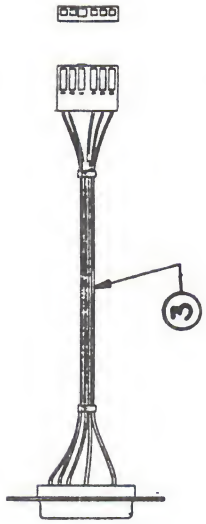
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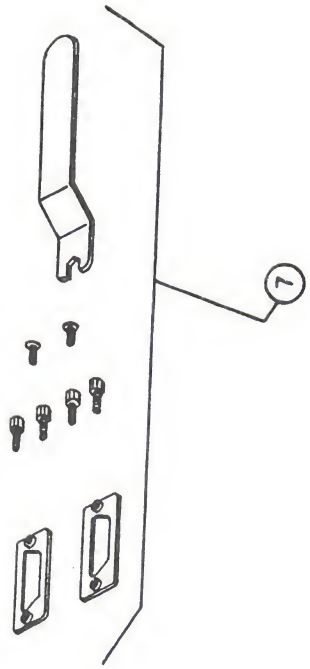
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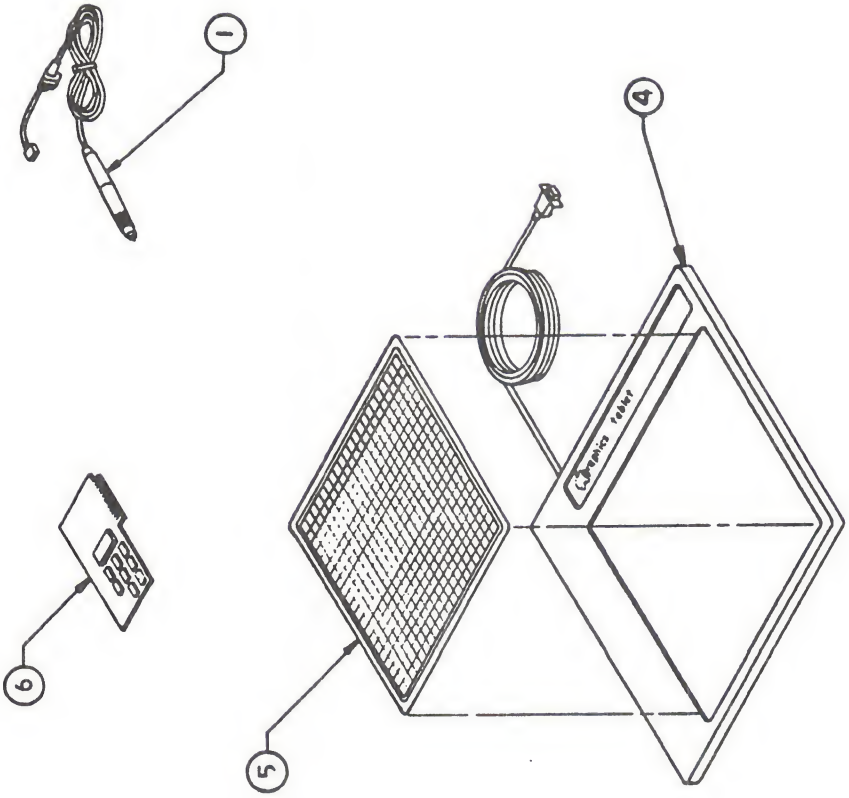
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GRAPHICS TABLET NON RFI-RFI

Item	Part No.	Description
1	661-91142	Graphics Tablet Stylus RFI
2	590-0102	Cable Assy Stylus, Internal
3	590-0085	Cable Assy Tablet, Internal
4	661-91140	Graphics Tablet Assy-RFI
5	825-0039	Overlay Apple Graphics Tablet
6	661-91141	Graphics Tablet Interface Card-RFI
7	600-8010	Assy, Installation Hardware (A //e)